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LISTER AND HIS WORK.

Lord Lister: His Life and Work. By Dr. G. T. Wrench. Pp. 384. (London: T. Fisher Unwin, n.d.) Price 15s. net.

I APPROACHED Dr. Wrench's book with jealous suspicion. I was unfavourably impressed by his preface, the final paragraph of which contains the statement:—"Between Van Helmont and Lister nothing was added to the fundamental philosophy of disease." This overcoloration was an unpromising introduction to an account of the life and work of one of the greatest figures in medicine—Joseph Lister.

However, as I read I became more and more fascinated with the book. In addition to an unbounded enthusiasm for his task, the author has a detailed knowledge of the development of the antiseptic system, and understands that it was because Lister was a scientific investigator of the first order that he was privileged to make so great a contribution to the welfare of mankind. Further, Dr. Wrench's appreciation of the intellectual and moral greatness of Lister is so sincere that one forgives the occasional commission of some of the faults of journalism. The book is written throughout in an interesting and forcible style. Well-chosen anecdotes and extracts from Lister's addresses are interspersed, which recall the charm of his personality to those who knew him, and assist to present the beauty of his character to those who had not this privilege.

The preliminary chapters are devoted to a short account of Lister's childhood, student days, and the first portion of his professional career at Edinburgh. The importance of his early scientific investigations and their bearing upon the great work of his life is made clear. Then follows an account of the condition of the surgical wards of a hospital in pre-Listerian days. The picture is painted in lurid colours, but, as the generation which remembers this condition is disappearing, it is necessary to impress upon the reader the immense human importance of the problem which occupied the attention of Lister.

The rest of the book is a history of the development and final triumph of the antiseptic method in surgery. The antiseptic system was based on the germ theory of putrefaction, which had been finally established by Pasteur. Pasteur himself was fully alive to the possible application of the facts he had discovered in the interpretation of infectious diseases, and was anxious to put his ideas to the test. At that time, however, he had neither access to hospitals nor a laboratory where

he could work at infectious diseases of animals. His opportunity soon arrived, and, in the same year (1866) that Lister was applying the germ theory to explain the occurrence of wound infection, Pasteur, at the request of the French Government, was occupied with an investigation into the causation of pébrine. This disease of silkworms he discovered to be caused by infection by a protozoan parasite, *Nosema*, which is transmitted from the moth through the egg to the next generation of worms.

From his first contact with hospital wards Lister had been impressed with the terrible evils of wound infection, and sorely perplexed as to its causation. What most surgeons took as a matter of course was to him, even as a student, a phenomenon urgently demanding explanation, and whilst house surgeon at University College Hospital he searched with his microscope for a possible fungus as causal agent.

In 1865 Lister read the papers of Pasteur dealing with the necessity of microbes for putrefaction, which appeared in the *Comptes rendus* of the Paris Academy of Sciences. The analogy between the happenings in a flask of broth exposed to the air and a festering wound was obvious to a mind so prepared; nevertheless hundreds of doctors must have read Pasteur's papers and failed to see that they had any significance for their art.

All this is well told in the chapter entitled "Perplexity and Enlightenment," and in two interesting chapters which follow, a description of the first attempts to put the principle into practice, and the striking success attained in one of the most insanitary hospitals in the kingdom is given.

Notwithstanding, antiseptic surgery was slow in making headway. Many surgeons failed to appreciate that antiseptic surgery was a system based on a principle, and seemed to think that they could neglect the principle and apply plenty of carbolic. As a consequence, they obtained results little, if at all, better than by their old methods.

The gradual spread of the gospel of "Listerism" until its final acceptance is dramatically told. In order to enhance the effect, the author has painted a sombre background representing the obstinate stupidity of many of the profession, and, to this end; has quoted from the speeches and writings of distinguished surgeons criticisms and opinions which it seems almost cruel to revive. This certainly produces the effect of contrast, but the lustre shed by the work of Lister is sufficient to render the artifice unnecessary.

The climax was reached at the International Medical Congress at Amsterdam in 1879, when Lister's appearance called forth the greatest ova-

tion ever witnessed at one of these assemblies. As the applause subsided, Prof. Donders, the president of the congress, stepped forth and said:—"Professor Lister, it is not only our admiration which we offer you; it is our gratitude, and that of the nations to which we belong."

The book concludes with an account of Lister's antiseptic technique, and the reasons on which it was based. This, in many respects admirable, is unnecessarily polemical. Like Dr. Wrench, I have no patience with those who would belittle the discoveries of Lister because it may be possible to attain the same end by a modification of his method; but the torrent of irony poured upon those surgeons who prefer to sterilise their dressings and tools by steam instead of by chemical means, or to adopt a number of precautions not found necessary by Lister, is, surely, uncalled for.

The elaborate equipment of the modern operating theatre is not, as many suppose, essential, but it is very convenient. The danger is that, by its obtrusive array of apparatus for sterilisation, the surgeon as well as the student may forget that it is impossible to sterilise the skin of the patient, so that it is, as Lister found, wiser to have a second line of defence in the form of an antiseptic dressing, which, although it may not destroy all the microbes in the area of operation, paralyses their activity until the wound has had time to close.

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SPECIALISED CHEMICAL TEXT-BOOKS.

- (1) *Gas Analysis*. By Prof. L. M. Dennis. Pp. xvi+434. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1913.) Price 9s. net.
- (2) *The Chemistry of Rubber*. By B. D. Porritt. Pp. vii+96. (London: Gurney and Jackson, 1913.) Price 1s. 6d. net.
- (3) *An Introduction to the Chemistry of Plant Products*. By Dr. Paul Haas and T. G. Hill. Pp. xii+401. (London: Longmans, Green and Co., 1913.) Price 7s. 6d. net.
- (4) *Grundriss der Fermentmethoden*. Ein Lehrbuch für Mediziner, Chemiker, und Botaniker. By Prof. Julius Wohlgemuth. Pp. ix+355. (Berlin: J. Springer, 1913.) Price 10 marks.

(1) **G**AS analysis enters into almost every branch of chemical work, and there is therefore no need to emphasise the importance of a standard work on the subject. Prof. Dennis began his book as a second edition of the English translation of Hempel's famous "Methods of Gas Analysis," but the inclusion in it of the advances made during the last fourteen years has turned it into a new book. Procedures for the determina-

tion of most of the common gases are given in considerable detail, but the book is rightly devoted mainly to rapid methods of technical gas analysis, including the determination of heating power as well as of quantity. The opening sections, occupying about one-third of the book, treat in turn of the collection, storage, measurement, and other manipulation of gases. The various forms of apparatus devised for gas analysis are described, a variety of important practical details being included. After describing fully the methods of analysis of the various simple gases, chapters are devoted to the investigation of flue gas, illuminating gas, acetylene, and air. Although remarkably complete, the book is not exhaustive; for example, no reference is made to Bone and Wheeler's valuable apparatus, first described in 1908. Only one of the automatic carbon dioxide recorders is described, whereas there are others on the market equally if not more satisfactory. However, these are only minor blemishes on a work which is likely to be widely used.

(2) Mr. Porritt is to be complimented on having compressed within narrow limits a very complete and readable account of the chemistry of rubber. His book can scarcely fail to be of great value to all who master it, and it should be of considerable service to those directly interested in the industry. As a practical man, the author is fully alive to the complexities of the problem presented by rubber, and his account of the advanced chemistry of its structure is combined happily with the more practical details of its working.

The first chapter deals with the properties of crude rubber, directing attention to its constituents and such properties as tackiness and perishing, which require scientific investigation, so that they may be prevented in the future. A neat summary is given of the chemical constitution of rubber and of its synthetic imitations. Sections 3 and 4 describe the process of vulcanisation and the various theories which have been put forward to explain it. We read with interest that Hancock, the first to utilise the process in England about 1842, conducted experiments from which any kind of scientific method was conspicuously absent! He was nevertheless successful! Although Mr. Porritt's book assures us that this is not the method of procedure in 1913, we cannot help feeling that if, a few years ago when money was plentiful in the industry, the plantation companies had endowed properly scientific research on rubber, they would not now be complaining of the unsatisfactory price which their product realises as compared with the wild article. The subject of synthetic rubber is fully treated, though no optimistic opinion is expressed as to its com-